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ScienceDirect

Procedia Manufacturing 3 (2015) 1825 – 1831

Procedia MANUFACTURING

6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015

The meetings of disaster victims as a space for developing community resilience

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Abstract

The objective of this study is to analyze how the collective meetings held inMãeLuiza community have helped in increasing community resilience after a disaster. This is a case study related to the disaster in MãeLuizacommunity due to the heavy rains that hit the city of Natal in June 2014. The disaster was a landslide that culminated in a huge crater affectingaround200 families. The method was based on the community ergonomics framework. The meetings realized by community members after the disaster were followed and mediated by ergonomists to understand how the community deal with disaster management issues. It was found that the meetings become an important space for the disaster victims helping then for different purposes, such as:to get information about the real situation that they were; in clarify conflicting information; obtain guidance; identify and organize their real demands; discuss and decide on the strategies to be adopted; bring government officials and technicians to the community to clarify, discuss and resolve their; involve community leaders; schedule a public hearing in the municipal parliament; be represented in front of authorities and the media; establish alliances with sectors of society; experience the collective participation, reflect and learn from their own experiences, and; monitor the decisions and actions taken by the authorities. We conclude from these results that the involvement and participation of the residents affected by the disaster in the meetings, following the decisions that needed to be taken in response to the disaster contributes to increasing the community resilience, as well as contribute to the development skills and to improve the interaction among individuals from the community.

Peer-review under responsibility of AHFE Conference

*Keywords:*Disasters; Meetings;Participation;Communityergonomics; Community resilience

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Peer-review under responsibility of AHFE Conference
doi:10.1016/j.promfg.2015.07.222

Fig. 1. (a) Guanabara av. in MãeLuíza just before disaster. source: a resident from MãeLuíza; (b) Guanabara av. just after the disaster. Source: Tribuna do Norte: Disponível: http://tribunadonorte.com. Data: 16/06/2014..

1. Introduction

The MãeLuizais a poor community is located in the east of the city of Natal, capital of Rio Grande do Norte, located in Northeastern Brazil. The neighborhood is a high disaster risk area, such as flooding, landslide and crater formation. The community was built long time ago in a region of relatively high altitude sand dunesbordered by the Atlantic Ocean. At that time the community was quite isolated from rest of city. However, with urban growing, MãeLuiza becomes the poor neighbor ofthe richest neighborhoods of Natal.

The heavy rains that hit the city of Natal, on 13 and 14 June 2014, caused an intense landslide in MãeLuiza. On 14 June, the landslide result in a huge crater, affecting 180 families, and 28 of them had their homes completely destroyed. During 2 days, 285 mm of rain were accumulated, equivalent to the historical average for the entire month of June. The crater was formed due the heavy rain seeped into steep–passing through an already existing hole of 1.20 m in diameter. The hole was formed due to a small leak in a sewer pipe. The small hole turned into a huge crater, with 10,000 m2 area and 30 m deep, causing the destruction mentioned, showed in Figure 1 and 2.

The United Nations Office for Disaster Risk Reduction - UNISDR has developed and implemented actions in order to reduce the risks of disasters and promote community resilience in cities [1].The actions planned by UNISDR [2] to enhance resilience are based on the Hyogo Framework for Action - HFA 2005-2015, which defines the conditions for a safer world by 2015.

Based on HFA, Brazil enacted in 2012 Law No. 12,608, which gives to cities, states and the federal government the responsibility for the planning and execution of actions for the reduction of disaster risk in the country and for the development of strategies that promote community resilience. Nevertheless, many cities in Brazil does not have their own strategies, plans and programs for disaster risk reduction, such as the city of Natal at the moment of this event.

1.1. Community resilience and disaster response

Community resilience can be viewed as both a theoretical framework and social process that explains how communities develop resilient responses to external forces, such as economic downturns, natural disasters, or other threats to sustainability [3]. Defining resilience as an intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances[4], the community resilience in disaster situations aims to develop in communities ways so that they can sustain required response actions under both expected and unexpected conditions.

According to UNISDR [5] disaster is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of

the affected community or society to cope using its own resources. Three factors must exist and combine to result in disasters: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. The consequences of disaster include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation [5]. According to Quarentelli[6], the current paradigm of research on disasters shall bedriven by two main ideas: 1) disasters are inherently social phenomena and natural events such as hurricanes or storms are not the disasters itself, but the source of the damage; 2) the disaster is rooted in the social structure and reflects social changing processes.

In Brazilian poor communities, like MãeLuiza, disasters are rooted into the social structure and reflect the social changes. As the community grows along the years, without adequate support from government, and the city reaches its neighborhood with big buildings (see figure 1), the seeds for the disaster started to grow. Without adequate basic services (e.g. waste collection) and education to deal with disasters, Brazilian poor communities developed lifestyles that contribute to the aggravation of the negative effects caused by these phenomena.

Considering disasters as a social phenomenon, there is a need to think about how society can deal with this phenomenon in an adaptive manner, to reduce the risks of disasters and the damage caused. As some governmentscannot eliminate vulnerabilities by removing huge populations from risky areas, the mitigation of damage is the only real risk management action taken, through civil defense and other related agencies. Then, it is usual to assign to such agents the responsibility for the emergency response actions during disasters. The population, in the other hand, is often seen solely as a victim, or as a passive entity in the process.

However, there is a growing belief that the actions of communities people at the heart of disaster risk management system in all its phases (pre-disaster, disaster response and post-disaster). Such actions are the crucial factor for the increase of community resilience. Therefore, understand how the people of communities affected by disasters act in these phases of disaster management is one of the topic of interest of Community Ergonomics

1.2. Community ergonomics

According to Cohen [7]; Cohen; Smith [8] Community Ergonomics emerged in the United States as a focused field of science for understanding and solving social and economic problems related to the urban poor, neglected by public policies or actions of governments. Community Ergonomics aims improving compatibility between people, technologies and environments [8], [9] in urban areas.Being based in the participation and involvement of community members in decision-making processes, as well as in the development and follow up the actions related to suchdecisions, the Community Ergonomics takes a bottom-up participatory approach, based on collective dialogues spaces and allowing the community to identify [10], discuss and solve their problems.

Understanding participation as an important aspect to improve disaster resilience, it is important do note that processes of participation will only be effective and efficient if the persons involved have individual interest in participating and have rewarded their participatory efforts[11]. Participation cannot in itself is not warranty of success, as it needs social and individual prerequisites and needs to be an agreed action mode, and contribute to the development of skills and improved communication and integration between individuals [11].

Therefore Community Ergonomics is concerned to use ergonomic methods to facilitate the involvement of the people of communities in meetings, decision-making processes, and the in search for improvements, so that each individual can understand their contribution and see your efforts reflected in the community's success. Regarding to disaster risk management, Community Ergonomics is one more way to improve community resilience.

2. Methodology

The central method of ergonomics, ergonomic work analysis EWA Montmollin [12] is based on the principle of social construction Daniellou[13]. This research falls within the scope of City Ergonomics City or Ergopolis[14], more specifically under the branch of Community Ergonomics. The social construction in this case assumed a specific configuration, a little different from applied in companies [15]. The social construction is a process for involvement the people in the situation under study, through focus groups (community members directly affected by

the disaster, other community members, agents and representatives of government agencies and departments, Red Cross volunteers etc.), and other groups of people collaborating in the research in order to provide information, validate information, analyze and propose recommendations for improvement of the situations.

In this research, the social construction was developed due the following needs: to understand the disaster process, to understand the real people's problems, the needs and demands as expressed by the community, to monitor and follow up the results of these demands, to monitor and understand the answers of the public authorities to these demands, and to understand the collective organization of the community to discuss, deliberate and follow their demands. The social construction consisted in a participatory and dynamic process of management for cooperation, including technical and policy management, necessary to manage the actions taken after the decisions made in the community meetings. Such decisions were viewed as the ergonomic demands made by community. These demands, in turn, resulted in a set of actions necessary to make the government act through new public policies and effective disaster prevention and recovering actions in order to positively transform the life and work in the community.

The management for cooperation implies organize ways for the collective choice of people who will be responsible to follow up demands, to facilitate their contact with the different governments offices according to the demand, and depending on the nature, scope and degree of complexity, help in the planning of immediate local actions, based on the skills, cooperation/solidarity and availability of community members. Technical management was about the mitigation actions, about how community should monitor reconstruction work in the areas affected by the disaster (retaining wall, sidewalks, access, urbanization, rainwater drainage system, sewage system, reform and reconstruction of buildings etc.), and follow up social demands (health center, paving, regular garbage collection, street lighting, recreational areas, regularity and efficiency of public transport, police station, religious institution etc.) The policy management concerns the interactions among community members themselves and between them and the representatives of the organs of government for routing, negotiation and meeting the demands.

The ergonomists play a key role in this process. Because they, instead of acting as specialists in disaster situations, they act in a participatory manner, together with the members of the community, assuming a role of mediator conflict situations. The meeting space provided by the ergonomists enables discussions among community members, among them and representatives of public or technical bodies involved to discuss issues for community reflection, problem identification, and for the formulation of demands and proposals from the community. The same space facilitates interactions among community members' and representatives of non-governmental organizations (e.g. lawyers, engineers, professors), helping in the proposals and follow up of practical actions undertaken by the community.

The social construction carried out by the ergonomists enable the understanding of the disaster situation through different points of view. From people who were involved in the disaster, civil defense personnel, up to high hierarchy members of governments bodies, each one assuming a specific roles. Such discussion allowed proposals for redesign of policies and actions for emergency response and mitigation, and reconstruction works of the affected areas, taking into account the situation, the population point of view, and the local culture. Finally, we claim that social construction is paramount to disaster risk management in the view of the Community Ergonomics, and to the development of community resilience in the strategic, tactical and operational level.

3. The case study

The article aims to describe a case study in MãeLuiza regarding the community meetings done after the disaster occurred in June 2014.

The research subjects are mainly the community members who have been affected by the disaster, people who have had their homes destroyed, damaged or interdicted by the Social Protection and Civil Defense and accepted to participate in the study. Some of these residents witnessed in loco the disaster. There were also the participation of civil defense agents and members of government agencies.

When authorized by the subjects, the internal community meetings the meetings with the government authorities were recorded. The meetings were held in a church, a State Public School and in a residence in MãeLuiza, in order to discuss community demands after the disaster. Besides performed audiovisual recording, the

ergonomistsparticipate in mediating the accounts and reports, focusing on the problems that need to be solved and the measures to be taken.

The issues reported by the community during the meetings were related to water supply, power supply, housing assistance, recovery and reconstruction of housing, transportation, security, health and social care. In this process the community people needed guidance on how and where to direct their demands, and which are the available and favorable instruments that could be used in order to warranty victims' rights.

During this research, wealso rescued and analyzed the recorded videos transmitted by local and national TV stations, as well as other news sites linked to the disaster. Through the record of meetings and newspaper articles we identify the problems occurred before the disaster, during the stages of response, and during the (ongoing) recovery phase. We also identify the strategies undertaken by community people for decision-making and problem solving based on the retrospective speech of the subjects in all phases of the disaster management.

Even before the disaster, the site of the collapse showed in Figure 1, people reported the existence of warning signs that worried the community. They, in turn, informed the authorities and relevant agencies using the usual communication channels. However, they have not been heard, highlighting the negligent behavior of the authorities, even in a situation aggravated by the heavy rains. During the disaster response actions, community members reported the unpreparedness of protection agents and civil defense, as well as the Fire Department, and the insufficient and inadequate equipment they used.

During the meetings there were issues related to emergency preparedness (lack of prevention, training and mitigation), during the disaster response (evacuation and escape plans; qualification of agents) and after the disaster (shelter, water and electricity, telephone , interdiction house, groceries, clothes, housing allowance, theft, lack of information given by the Government; inefficient response to disaster and reconstruction, the role and the actual actions of authorities, politicians and community leaders, difficulties and delays to meet the demands of the community).

The following statements of the residents show some of the problems experienced by the community during the disaster management phases.

- Evacuation
  Subject 1: *"I was in the kitchen. Then they arrived like this: – Go, go, you have to leave. Let's go!! . And I: – how about my documents? ... They said: – no document! Andthey pulling me off."*
  Subject 2: *"You did not take it (the document)?"*
  Subject 1: *"No. I took only my cell."*
  It is important to note that for poor people of communities their documentation is one of the most important things, because without them they can be arrested by the police.
- Sealed off houses
  Subject 3: *"they sealed off many houses without real need ... but what can I do ?! They sealed off ... They sealed off many houses that did not suffer any damage ... you see by the naked eye (...) Other housesnearby the crater they do not sealed off "*
- Housing allowance
  Subject 4: *"The people who came out of the houses ca not afford to pay rent. And now? "*
  Subject 3: *"Let's get out chargingauthorities, my people ... the people who did not receive the social rent [*Housing allowance*] have all documentation needed."*
- Withdrawals (thefts)
  Subject 6: *"There was looting! Withdrawals continue, in small amounts, but still. There are closed houses in which the thief takes the electrical switches."*
- Start of reconstruction work
  Subject 7: *"And the mayor gave a deadline for the start of work?"*
  Subject 3: *"It is still pending."*
  Subject 8: *"The people [the victims]'re silent ... then the people [town people] think that everything has been resolved."*

It can be seen from the participation in the meetings and the analysis of records that the meetings have become a talking space for disaster victims, where they: inform about the actual situation in which they are and clarify conflicting information; search for guidance; identify and organize their demands; discuss the strategies to be adopted; involve community leaders; be represented by the authorities and the media; establish new alliances; reflect and learn from their own experiences, and; monitor the decisions and actions taken by the authorities.

The meetings mediated by ergonomists under the coordination of community leaders took place between June and August 2014. After that the leaders failed to convene the meetings because the victims began receiving housing assistance and do not participate as they were in the previous meetings. Until then the community had already managed a public hearing at Natal City Hall to discuss the arrangements in relation to disaster damage. During this period some community decisions had already been taken and sent to the government, such as approval for the housing assistance payment in the amount of a national minimum wage for almost all people who have had homes destroyed or sealed off(some people were not included due to management failure), normalization of the water and electricity supply; request the municipal government to the federal government for disaster status enactment, aiming the financing of reconstruction work.

Having community leaders failed to convene the meetings, the community itself felt the need to continue to meet because many demands had not been met, such as the beginning of the reconstruction works of the areas destroyed by the disaster. Thus, the community began to convene and conduct meetings on its own initiative.

However, the reconstruction works of infrastructure started only in January 2015. Seven months after the disaster, demonstrating the managerial inefficiency of the agencies of the municipal government, the bureaucracy and the election law of the country, that forbid bidding process near national elections held in October and November 2014. In January there wasn't forecast for completion of the works of reform and reconstruction of destroyed homes. The situation changed again after the March 21, 2015, when heavy rains dragged a large volume of water and waste through the streets.Part of the waste washed by the rains has been accumulated in a containment screen attached to the input of the provisory rainfall drainage pipe, and the water was flowing out of the drainage pipe. Seeing this situation, one of the residents tried to solve the problem on its own way, remove the accumulated garbage from the screen saver, improperly placed, during the flood, ended up being sucked into the pipe. He was missed for seven days and found dead.

4. Conclusions

The absence of a formal disaster risk management plan including the community participation can provide greater disharmony among people and agents and inadequate disaster response actions. In addition, the results of the case study indicated the lack of preparation, organization and planning in the government and agencies responsible for disaster management, which led community members to act often on their own without the necessary qualification and minimal resources. These factors shows the fragility of disaster risk management in the city.

On the other hand, even without having proper qualification, some actions taken by the community before, during and after the disaster showed the importance of the initiative of residents and the importance of community collective action. These actions also indicate that there is a certain community resilience potential, which may contribute to increased global community resilience.

The Community Ergonomics framework stressed the importance of involvement and participation of stakeholders and research subjects in actions aimed at promoting the resilience of the community. Within this context of participation, it is important to note that the involvement of the authors of this research (the ergonomists) at the meetings, to guide victims regarding the decisions to be taken and the strategies that need to be taken, made it possible to understand the importance of the ergonomists as mediators in the interactions in society for the development of collective actions.

Finally, we concluded that the meetings held by the community have become into a collective conversation space in which all participants were able to talk and reflect on its reality, decide on their demands and strategies to ensure their rights. The meetings allow participants to understand the situation prone to disasters they live showing also the benefits when they act collectively to manage the impacts of such events. It also be seen that these meetings provide knowledge and experience sharing among participants, the collective exercise of citizenship, maturity and the scope of some achievements. Everything resulting in a gradual improvement of the community resilience to disaster risks.

Acknowledgements

The authorsof this paperwould like to thankDean ofExtension ofFederal University ofRio Grande do Norteandthe opportunitygrantedpromotion; the National Institute ofNuclearEngineeringof the State ofRio de Janeirofor their support andpartnershipin the executionof this study, and; the inhabitantsof MãeLuíza communityfor acceptingandavailable tohelpwiththe search.

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